

Comparison of suicide attempt cases admitted to emergency services during COVID-19 and before

Comparison of suicide attempts during and before COVID-19

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Abstract

Aim: COVID-19 infection did not remain isolated in China, where it originated, but spread all over the world and caused a pandemic. It is known that people's mental health may deteriorate in situations such as pandemics that create a global impact. Deterioration in people's mental health can affect the number and general characteristics of suicide attempt cases admitted to the emergency department. The aim of this study was to compare the number of suicide attempts in the emergency department in two periods before and during COVID-19.

Material and Methods: The study was planned as a retrospective, observational study. Suicide attempt cases admitted to our emergency department 2 years before and 2 years during COVID-19 infection were analyzed. Patients were divided into two groups.

Results: A total of 900 patients were included in the study. The mean age was 41.44 ± 14.97 years. The number of admissions before COVID-19 infection was higher. Statistically significant differences were found between both groups in marital status, previous diagnosis of psychiatric illness, educational status and age.

Discussion: The number of patients admitted to our emergency department with suicide attempts decreased in the 2-year period following the pandemic. Statistically significant changes were found in patient characteristics. Especially patients who were single, unemployed and had a history of depressive mood disorder presented to the emergency department with suicide attempts more frequently during COVID-19. We argue that preventive and preventive health services should be expanded in epidemic situations such as pandemics.

Keywords

COVID-19, Suicide, Emergency Department

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Introduction

Suicide, which refers to ending one's life by one's own will and whose Latin meaning is "killing oneself" (suicide), is considered a fatal act [1]. According to the World Health Organization, the number of deaths due to suicide is more than 700,000 every year [available at: Organization WH. Preventing suicide: a global imperative. Luxemburg: World Health Organization. 2014. s. 07-08]. Suicidal behavior can be observed in individuals with severe mental disorders as well as in normal individuals reacting to challenging life conditions [2].

Durkheim argued in 1897 that suicide should be considered a purely social phenomenon [3]. Positive or negative changes in the social structure lead to an increase in suicide rates and a decrease in social peace and welfare. The fact that suicide rates and forms vary from one society to another, and even that the methods and numbers of suicides differ in different segments of the same society, indicates that social phenomena affect suicides [available at: Odağ C: Suicide. Izmir: Izmir Psychiatry Association Publications. 1995,4]. Problems related to marriage, unemployment, low socioeconomic level, living alone, migration history and stressful social events can be listed as determinants of suicide rates [5,6].

In December 2019, the COVID-19 outbreak in China caused global concern. All health systems around the world have been helpless in combating the pandemic [7]. Unpredictable outcomes, uncertainty, and information pollution about COVID-19, especially on social media, can affect people's mental state and health. Restrictive practices related to the pandemic such as social isolation and quarantine may cause sadness, anxiety, fear, panic, irritability, anger, distress, frustration, guilt, helplessness and loneliness. Such symptoms, which many individuals may experience during or after a crisis, can lead to serious mental problems and suicidal behavior [8,9,10].

Previous studies have reported an increase in the prevalence of depression, anxiety and sleep disorders and the number of suicide attempts in COVID-19 patients [11,12,13]. In our study, we aimed to compare the number, demographic characteristics and characteristics of pre-COVID-19 and COVID-19-era suicide attempt cases admitted to our emergency department.

Material and Methods

Study Design

This study was designed as a retrospective observational study. After the pandemic was declared, strict health measures were taken in our country as in the whole world. These measures were actually eased approximately 2 years after the onset of the pandemic. For this reason, all patients admitted to the emergency department with suicide attempts or suspicion between March 2018 and March 2022, covering 2 years before and 2 years after the period of March 2020, when COVID-19 infection started, were included in the study. Before starting the study, ethics committee approval was obtained from Izmir Katip Çelebi University Ethics Committee for Non-Invasive Clinical Research dated 16.06.2022 and decision number 0309.

Patients and Setting

All patients aged 18 years and older who presented to the emergency department with a suicide attempt or suspicion between the specified dates were included in the study.

The records of patients with suicide attempts or suspicion were verified from the hospital data system and psychiatry consultations. Patients with incomplete data and patients referred to an external center were excluded from the study.

Data Collection

The data of the patients who met the study criteria were collected through the hospital data registry system. Age, gender, marital status, occupation, known diagnosis of psychiatric illness, number of suicide attempts, method of suicide attempt, educational status, family history and outcome information were recorded. Patients were divided into two groups: before and during the pandemic. The data obtained were compared between the two groups.

Statistical Analysis

Data were analyzed using the statistical package program IBM SPSS Statistics Standard Concurrent User V 26 (IBM Corp., Armonk, New York, USA). Descriptive statistics were given as number of units (n), percentage (%), mean \pm standard deviation, median, minimum and maximum values. Normal distribution of numerical variables was evaluated by the Shapiro-Wilk normality test. Numerical variables according to the time of diagnosis were compared with independent samples t-test if the data were normally distributed and with the Mann-Whitney U test if the data were not normally distributed. The relationship between categorical variables was evaluated by Pearson's chi-square and Fisher's exact test. $p < 0.05$ was considered statistically significant.

Ethical Approval

Ethics Committee approval for the study was obtained.

Results

A total of 900 patients were included in the study and 426 (47.3) of them were females. The mean age was 41.44 ± 14.97 years. When all patients were divided into two groups before and during the pandemic and compared, there was a statistically significant difference between the categories of marital status, occupation, psychiatric diagnosis, method, educational status, family history and outcome variables ($p < 0.05$).

In the marital status variable, single patients accounted for 55% (305 people) and married patients accounted for 45% (45) before the pandemic. During the pandemic, single patients accounted for 64.3% (222) and married patients accounted for 35.7% (123). Comparison of Suicide Cases Before and During the Pandemic with Categorical Variables is presented in Table 1 and Table 2.

There is a statistically significant difference between the variables of age and number of attempts and suicide cases before and during the pandemic ($p < 0.05$). Regarding the age variable, the mean age of the patients before the pandemic is higher. In the number of interventions variable, the average number of attempts in patients before the pandemic is higher. The Comparison of Suicide Cases Before and During the Pandemic with the Variables of Age and Number of Attempts is presented in Table 3.

Discussion

It is known that pandemics, which cause global effects as a result of epidemic diseases such as the COVID-19 pandemic,

Table 1. Comparison of Suicide Cases Before and During the Pandemic with Categorical Variables.

		COVID		Total	X ²	p	
		Pre COVID-19	COVID-19 era				
Gender	Female	n	263 ^a	163 ^a	0,002	0,967	
		%	47,40%	47,20%			47,30%
	Male	n	292 ^a	182 ^a			474
		%	52,60%	52,80%			52,70%
Marital Status	Single	n	305 ^a	222 ^b	7,734	0,005*	
		%	55,00%	64,30%			58,60%
	Married	n	250 ^a	123 ^b			373
		%	45,00%	35,70%			41,40%
Occupation	Unemployed	n	308 ^a	232 ^b	14,583	0,002*	
		%	55,50%	67,20%			60,00%
	Civil Servant	n	60 ^a	19 ^a			79
		%	10,80%	5,50%			8,80%
	Workers and Private Sector	n	153 ^a	76 ^a			229
		%	27,60%	22,00%			25,40%
	Retired	n	34 ^a	18 ^a			52
		%	6,10%	5,20%			5,80%
Psychiatric Diagnosis	None	n	178 ^a	101 ^a	40,865	0,001*	
		%	32,10%	29,30%			31,00%
	Psychosis	n	61 ^a	39 ^a			100
		%	11,00%	11,30%			11,10%
	Anxiety	n	44 ^a	15 ^a			59
		%	7,90%	4,30%			6,60%
	Depressive Disorder	n	92 ^a	93 ^a			185
		%	16,60%	27,00%			20,60%
	Alcohol-Substance Use Disorder	n	99 ^a	60 ^a			159
		%	17,80%	17,40%			17,70%
	Bipolar Disorder	n	73 ^a	18 ^a			91
		%	13,20%	5,20%			10,10%
Other	n	8 ^a	19 ^a	27			
	%	1,40%	5,50%	3,00%			

have effects on mental health. WHO has predicted an increase in the number of mental health problems due to the pandemic. They brought this situation to the agenda through various messages and publications aimed at mental health awareness and prevention (available at: <https://www.who.int/publications-detail-redirect/9789240003927>). Suicide attempts are one of the frequent presentations of mental health problems to the emergency room. In this study, we aimed to investigate the effects of mental disorders that occur during the pandemic on suicide attempts in our society. We compared changes in the number of suicide cases and other characteristics of patients who presented with a suicide attempt during the pre-pandemic and 2-year period when the pandemic measures were lifted. Our results show that the number of patients admitted to our hospital with suicide for 2 years during the pandemic has decreased. Some of the studies investigating drug use and deaths related to COVID-19 disease focused on patients using antidepressant drugs. In the study conducted by Bora et al., it was determined that the use of antidepressants reduces mortality [14]. This situation has been associated with the fact that the pituitary hormone balance is affected by pandemic

situations such as COVID-19 and the stress hormone levels are high. The difference in the number of suicide attempts admitted to the emergency department before and during COVID-19 may be due to the drug effect. However, we found that there was a statistically significant increase in the rates of patients who were single, unemployed, diagnosed with known depressive disorder and had not completed their basic education, and presented to the emergency service with suicide attempts concurrently with the pandemic (p=0.005, p=0.002, p=0.001, p= 0.001). When the patients were examined according to their gender, there was no statistically significant difference between the patients who applied to the emergency department with a suicide attempt before and during the COVID-19 outbreak. It was found that the male gender was more common in both periods. In the study conducted by Kang et al. in which suicide cases admitted to the emergency department after the COVID-19 pandemic were examined, no statistically significant difference was found in gender distribution before and during the pandemic [15]. The results are similar to our study, but the gender distribution was predominantly female in both

Table 2. Comparison of Suicide Cases Before and During the Pandemic with Categorical Variables.

		COVID		Total	X ²	p	
		Pre COVID-19	COVID-19 era				
Method	Drug	n	356 ^a	172 ^b	528	101,187	0,001*
		%	64,10%	49,90%	58,70%		
	Self Cut	n	134 ^a	53 ^b	187		
		%	24,10%	15,40%	20,80%		
	Jumping	n	24 ^a	58 ^b	82		
		%	4,30%	16,80%	9,10%		
	Foreign Body Ingestion	n	13 ^a	12 ^a	25		
		%	2,30%	3,50%	2,80%		
	Chemical	n	0 ^a	25 ^b	25		
		%	0,00%	7,20%	2,80%		
Hanging	n	28 ^a	20 ^a	48			
	%	5,00%	5,80%	5,30%			
Firearm	n	0 ^a	5 ^b	5			
	%	0,00%	1,40%	0,60%			
Educational Status	None	n	0 ^a	5 ^b	5	11,765	0,019*
		%	0,00%	1,40%	0,60%		
	Primary School	n	155 ^a	108 ^a	263		
		%	27,90%	31,30%	29,20%		
	Middle School	n	135 ^a	91 ^a	226		
		%	24,30%	26,40%	25,10%		
High School	n	175 ^a	97 ^a	272			
	%	31,50%	28,10%	30,20%			
University	n	90 ^a	44 ^a	134			
	%	16,20%	12,80%	14,90%			
Family History	None	n	417 ^a	337 ^b	754	79,574	0,001*
		%	75,10%	97,70%	83,80%		
	Yes	n	138 ^a	8 ^b	146		
		%	24,90%	2,30%	16,20%		
Outcome	Discharged	n	413 ^a	243 ^a	656	51,051	0,001*
		%	74,40%	70,40%	72,90%		
	Hospitalization	n	75 ^a	94 ^b	169		
		%	13,50%	27,20%	18,80%		
	Dispatched	n	62 ^a	4 ^b	66		
		%	11,20%	1,20%	7,30%		
Exitus	n	5 ^a	4 ^a	9			
	%	0,90%	1,20%	1,00%			
Total	n	555	345	900			
	%	100,00%	100,00%	100,00%			

*p<0,05

Table 3. Comparison of Suicide Cases Before and During the Pandemic with Age and Number of Attempts Variables.

		COVID		Test Statistics	p
		Pre-COVID 19	COVID 19 era		
Age	Mean±SS	41,45±15,57	36,59±14,32	-4,957	0,001†
	M (min-max)	39 (17-96)	33 (16-90)		
Number of Attempts	Mean±SS	1,75±1,06	1,42±1,07	-6,62	0,001†
	M (min-max)	1 (1-8)	1 (1-11)		

Numerical variables are given as mean±standard deviation and median (min-max). ‡: Independent samples t test, †Mann-Whitney U test

periods. This can be explained by the fact that the studies were conducted in different societies. However, it should be noted that the effect of epidemic situations such as pandemics on patients who applied to the emergency department with a suicide attempt is independent of gender.

Again, in the study by Kang et al., the rate of admission to the emergency department with suicide is higher among those who were single in both periods [15]. In the study by Kang et al., no statistical significance was reported between the two periods in terms of single or other marital status. In our study, it was found that single patients increased statistically during the pandemic, while married patients decreased statistically. Our result may be due to the decrease in social interaction of single patients with the restrictions on staying at home, and the decrease in social communication, which is an important condition in the prevention of mental disorders.

The mean age of patients who attempted suicide during the pandemic was found to be statistically significantly lower. In the study conducted by Shrestha et al., no statistical significance was found between the ages of patients who presented to the emergency department with a suicide attempt in the pre- and post-COVID-19 periods [16]. Their study reported that the average age was 32 years. In our study, while the mean age was 39 years before COVID-19, it was found to be 33 years during COVID-19, and the difference between them is statistically significant.

While the number of suicide attempts with medication and incision decreased statistically significantly, the number of attempts with jumping, hanging and firearms increased statistically. In the study by Kang et al., it was determined that the number of suicide attempts by taking drugs increased statistically significantly after the pandemic. This may be due to social differences and existing comorbid conditions of the patients and the different access to drugs.

While the rates of discharge from the emergency department and mortality rates with the pandemic did not differ statistically significantly, it was found that the rates of hospitalization and referral increased statistically significantly. They reported that mortality rates increased, hospitalization rates increased, and referrals out of hospital decreased during the COVID-19 period. They explained this by the effect of emptying beds as a result of increased mortality. However, in our study, the rates of hospitalization and referral increased, while the rates of mortality and discharge from the emergency room did not change before and during COVID. The decrease in the number of patients in the rooms due to the measures may have been the main reason for out-of-hospital referrals.

Limitations

The study has some limitations. The first limitation is that it was retrospectively reviewed and the accuracy of the information written on the data recording system and in the consultation note was taken as basis. The second limitation is that the study was conducted in a single center. Although it was conducted in a large hospital, the fact that it reflects the population of a single region constitutes a limitation. Since we have a relatively young patient population, it may not be correct to generalize the

study results to all age groups. There is a possibility that death after hospitalization and intensive care unit hospitalization may be due to reasons other than suicide and this may also be considered as a limitation.

Conclusion

The results of our study show that although the number of patients admitted with suicide attempts decreased in the 2-year period with the pandemic, the general characteristics of the patients changed. Particular attention should be paid to emergency room admissions of patients who are single, unemployed and have a history of depressive mood disorder. In epidemic situations such as pandemics, it may be useful to expand preventive and preventive health services.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of interest

The authors declare no conflict of interest.

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